

WHAT IS CLAIMED IS:

1. A method of compounding a filled silicone composition, comprising:

compounding a filler, processing fluid and silicone polymer in a first compounding apparatus to produce a first dispersed composition; and

5 simultaneously compounding a filler, processing fluid and silicone polymer in a second compounding apparatus that shares a common extruder shaft with said first compounding apparatus to produce a second dispersed composition.

10 2. The method of claim 1, wherein said second compounding apparatus is sequential to said first compounding apparatus.

3. The method of claim 1, wherein said second compounding apparatus is sequential to and contiguous with said first compounding apparatus.

15 4. The method of claim 1, wherein said second compounding apparatus is sequential to and contiguous with said first compounding apparatus separated only by a transition section.

5. The method of claim 4, comprising discharging said first dispersed composition from said transition section.

20 6. The method of claim 4, wherein said transition section, comprises an enclosed discharge chamber defined by a first sectioning wall, a second sectioning wall and a contoured lower wall that transitions toward a discharge port and a shaft that extends through said first sectioning wall, traverses said chamber and extends through said second sectioning wall.

25 7. The method of claim 6, wherein said shaft is common to said first compounding apparatus and to said second compounding apparatus.

8. The method of claim 7, further comprising disconnectable couplings that permit said first compounding apparatus to be disconnected from said second compounding apparatus.

5 9. The method of claim 1, wherein said common extruder shaft is operated at a torque at least 60% of capacity to produce dispersed compositions from both first and second compounding apparatus.

10. The method of claim 1, wherein said filler is a raw, untreated silica.

10 11. The method of claim 1, wherein said filler is a pretreated filler said pretreated filler being prepared by treatment of an untreated filler with a filler treatment agent prior to being compounded.

12. The method of claim 1, wherein said processing fluid is a silanol-reacting treating agent.

15 13. The method of claim 1, wherein said filler contains silanol groups and said processing fluid is a treating agent comprising at least one of silanol-stopped polydimethylsiloxane, octamethylcyclotetrasiloxane or hexamethyldisilazane.

20 14. The method of claim 1, wherein said processing fluid is selected from the group consisting of silanol-stopped polydimethylsiloxane, vinyl-stopped dimethyl-methylvinylsiloxane and hydroxy-terminated polydimethyl-methylvinylsiloxane

25 15. The method of claim 1, comprising controlling said compounding to provide a total throughput to screw speed ratio in each said compounding apparatus between about 0.01 and about 100 lb/hour/rpm.

16. The method of claim 1, comprising controlling said compounding to provide a total throughput to screw speed ratio in each said compounding apparatus between about 0.1 and about 70 lb/hour/rpm.

17. The method of claim 1, comprising controlling each said compounding to provide a total throughput to screw speed ratio in each said compounding apparatus between about 0.5 and about 50 lb/hour/rpm.

18. The method of claim 1, wherein the compounding is carried out under an inert gas.

19. A method of compounding a filled silicone composition, comprising:

forming a premix of filler and silicone polymer in a first mixer;

compounding a portion of said premix with additional silicone polymer in a first compounding apparatus to produce a first dispersed composition; and

simultaneously compounding at least another portion of said premix and silicone polymer in a second compounding apparatus that shares a common extruder shaft with said first compounding apparatus to produce a second dispersed composition.

20. A system for compounding filled silicone compositions, comprising:

a first compounding apparatus;

and a sequential second compounding apparatus that shares a common shaft with said first compounding apparatus.

21. The system of claim 20, wherein said sequential second compounding apparatus is contiguous to said first compounding apparatus.

22. The system of claim 20, wherein said sequential second compounding apparatus is sequential to and contiguous with said first compounding apparatus.

23. The system of claim 20, wherein said first and second compounding apparatus are characterized by a combined L/D ratio of greater than 40.

24. The system of claim 20, wherein said first and second compounding apparatus are characterized by a combined L/D ratio of greater than about 60.

25. The system of claim 20, comprising a co-rotating, intermeshing double screw compounding apparatus.

26. The system of claim 20, comprising a counter-rotating, non-intermeshing double screw apparatus.

27. The system of claim 20, comprising a single screw reciprocating apparatus.

28. The system of claim 20, comprising a single screw non-reciprocating apparatus.

29. An extruder transition section, comprising an enclosed discharge chamber defined by a first sectioning wall, a second sectioning wall and a contoured lower wall that transitions toward a discharge port and a shaft that extends through said first sectioning wall, traverses said chamber and extends through said second sectioning wall.

30. The extruder transition section of claim 29, wherein said section connects a first compounding apparatus to a second compounding apparatus.

31. The extruder transition section of claim 30, wherein said shaft is common to said first compounding apparatus and to said second compounding apparatus.

32. The extruder transition section of claim 31, further comprising disconnectable couplings that permit said first compounding apparatus to be disconnected from said second compounding apparatus.

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